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Minimally Invasive Solutions: Laparoscopic Management of A Case of Strangulated Femoral Hernia

Minimal İnvaziv Çözümler: Bir Strangüle Femoral Herni Olgusunun Laparoskopik Yönetimi

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ABSTRACT

Strangulated femoral hernia is a rare but serious surgical emergency characterized by the entrapment of abdominal contents in the femoral canal, leading to compromised blood flow and potential complications such as ischemia, necrosis, or perforation. Prompt surgical intervention is essential to reduce morbidity and mortality. While open surgery has long been the standard treatment, laparoscopic techniques are increasingly preferred due to their minimally invasive nature, shorter recovery time, and lower complication rates. In this case report, the successful management of a strangulated femoral hernia in an 82-year-old female patient using with laparoscopic method was presented. The laparoscopic approach not only allowed for accurate intra-abdominal exploration but also facilitated a safe and effective repair. This case highlights the feasibility and advantages of laparoscopy even in elderly patients, supporting its role as a reliable option in the emergency management of femoral hernias.
Keywords: Femoral hernia; laparoscopy; minimally invasive surgical procedures; emergency surgical procedures.

ÖZ

Strangüle femoral herni, abdominal içeriğin femoral kanalda sıkışmasıyla karakterize nadir ancak ciddi bir cerrahi acil durumdur ve kan akışının bozulmasına ve iskemi, nekroz veya perforasyon gibi olası komplikasyonlara yol açar. Morbidite ve mortaliteyi azaltmak için derhal cerrahi müdahale şarttır. Açık cerrahi uzun zamandır standart tedavi yöntemi olsa da, minimal invaziv doğası, daha kısa iyileşme süresi ve daha düşük komplikasyon oranları nedeniyle laparoskopik teknikler giderek daha fazla tercih edilmektedir. Bu olgu sunumunda, 82 yaşında bir kadın hastada strangüle femoral herninin laparoskopik yöntemle başarılı bir şekilde yönetimi sunulmuştur. Laparoskopik yaklaşım yalnızca doğru intraabdominal eksplorasyona izin vermekle kalmamış, aynı zamanda güvenli ve etkili bir onarımı da kolaylaştırmıştır. Bu vaka, laparoskopinin yaşlı hastalarda bile uygulanabilirliğini ve avantajlarını vurgulayarak, femoral hernilerin acil tedavisinde güvenilir bir seçenek olarak rolünü desteklemektedir.
Anahtar kelimeler: Femoral herni; laparoskopi; minimal invaziv cerrahi işlemler; acil cerrahi işlemler.

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INTRODUCTION

Femoral hernias are seen in approximately 2-4% of all hernia types and are 4 times more common in women over the age of 50 (1,2). Since the risk of strangulation is high, it requires careful management. Although open surgery is considered the traditional treatment method, laparoscopic surgery has recently attracted attention because of its minimally invasive features, low complication rates, and faster recovery

time (3-5). Laparoscopic methods offer an important option, especially in selected patients, by providing both diagnostic and therapeutic advantages (6,7). This case report aimed to present the successful treatment of a strangulated femoral hernia in an 82-year-old female patient with the laparoscopic method and discuss the advantages of this method.

CASE REPORT

An 82-year-old multiparous female patient was admitted to the emergency department with a 6-hour history of sudden onset severe lower abdominal pain (VAS score: 8/10) accompanied by right inguinal swelling. The patient reported associated nausea without vomiting and inability to pass gas or stool for the past 4 hours. Her medical history was significant for pulmonary embolism treated with anticoagulant therapy. She had no previous abdominal surgeries or known hernias.

On physical examination, the patient appeared distressed with stable vital signs (blood pressure: 130/80 mmHg, pulse: 88 bpm, temperature: 37.2°C). Abdominal examination revealed mild distension with diffuse tenderness to palpation, particularly in the lower quadrants. Bowel sounds were hyperactive. A painful, non-reducible, firm mass measuring approximately 3 cm was palpated in the right femoral region, inferior to the inguinal ligament, with overlying skin erythema and induration. The mass could not be reduced by manual manipulation.

Laboratory investigations revealed leukocytosis (white blood cell count: 14.22 x10^3/μL) and elevated C-reactive protein (4.4 mg/L), suggesting an inflammatory process. Renal and hepatic function tests were within normal limits.

Initial plain abdominal radiography demonstrated dilated small bowel loops with multiple air-fluid levels, consistent with mechanical small bowel obstruction. Although ultrasonography is typically the first-line imaging modality for hernia evaluation, contrast-enhanced abdominal computed tomography (CT) was directly ordered by the emergency department physicians due to the patient's acute presentation with signs of bowel obstruction. Additionally, the patient presented during night hours when experienced ultrasonography technicians and radiologists with expertise in emergency hernia assessment were not readily available, making CT the most practical and reliable imaging option for rapid and accurate diagnosis. The CT scan revealed a strangulated hernia sac in the femoral canal containing a small bowel segment, with associated long-segment air-fluid levels and dilatation of the ileojejunal loops extending proximally from this level (Figure 1).

Based on these clinical and radiological findings, a diagnosis of strangulated right femoral hernia with small bowel obstruction was established, and the patient was scheduled for emergency surgical intervention. The operation was performed under general anesthesia using a standardized three-port laparoscopic transabdominal preperitoneal (TAPP) technique. After establishing pneumoperitoneum with CO_2 insufflation to 12-14 mmHg, a 12-mm umbilical trocar was inserted for the camera, with two 5-mm working ports placed in the bilateral lower quadrants. The patient was positioned in the Trendelenburg position with left side elevation to optimize visualization of the pelvic anatomy.

Laparoscopic exploration confirmed the presence of a strangulated small intestine within the right femoral canal, consistent with preoperative imaging (Figure 2a). The peritoneum was incised above the anterior superior iliac spine, and the preperitoneal space was carefully dissected to visualize the myopectineal orifice and identify the femoral canal defect. The incarcerated small bowel segment was gently released from the femoral canal and assessed for viability. The bowel appeared necrotic with compromised blood supply (Figure 2b), necessitating resection.

A laparoscopic small bowel resection was performed, removing 15 cm of necrotic intestine. Intestinal continuity was restored using a side-to-side anastomosis technique with a linear cutting stapler (Figure 2c). The resected specimen was removed through the umbilical port site using an extraction bag to prevent contamination.

Following bowel resection and anastomosis, attention was directed to hernia repair. The femoral canal was closed using a lightweight polypropylene mesh (10x15 cm, 50 g/m^2).



Figure 1. a) Hernia sac containing ileal segments, **b)** hernia sac (asterisk) which contains the ileal segments and is dilated with air-fluid levels in the ileojejunum proximally of this level view (arrow)

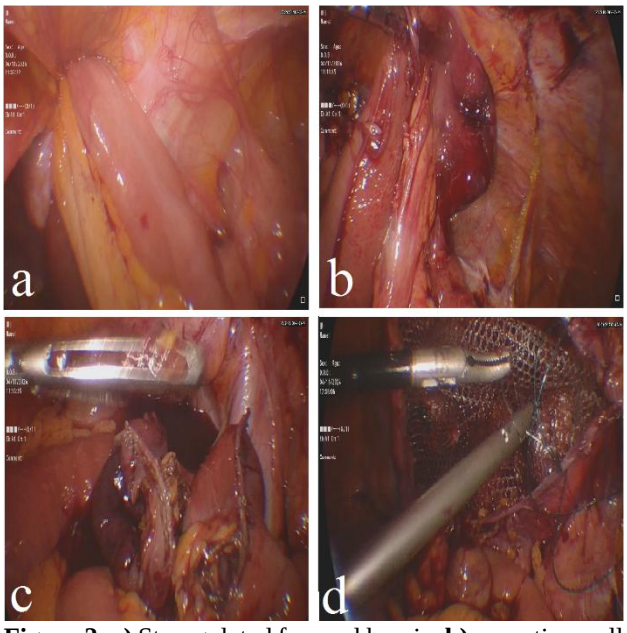


Figure 2. a) Strangulated femoral hernia, **b)** necrotic small intestine released from hernia, **c)** side-to-side anastomosis and resected necrotic small bowel, **d)** fixed preperitoneal mesh, hernia sac, and peritoneal closure

The mesh was positioned to adequately cover the myopectineal orifice with at least 3 cm overlap in all directions: extending medially beyond the midline, laterally to the anterior superior iliac spine, superiorly above the anterior superior iliac spine, and inferiorly below Cooper's ligament. The mesh was secured using absorbable tacks, carefully avoiding the lateral femoral cutaneous nerve territory (triangle of pain) to prevent chronic neuralgia. The peritoneal flap was then closed with a continuous 3/0 barbed suture to ensure complete coverage of the mesh (Figure 2d).

The total operative time was 120 minutes with no intraoperative complications. Estimated blood loss was minimal (<50 mL). The patient was closely monitored in the intensive care unit during the immediate postoperative period due to her age and comorbidities.

Postoperative recovery was uneventful. The patient's nasogastric tube was removed on postoperative day 2 following the return of bowel function. Oral intake was gradually resumed, starting with clear liquids on postoperative day 3, which was well tolerated. Pain management was achieved with multimodal analgesia, including acetaminophen and low-dose opioids. The patient was mobilized early and achieved independent ambulation by postoperative day 4.

The patient was discharged home on postoperative day 5 in stable condition with normal bowel function and adequate pain control. Discharge instructions included wound care, activity restrictions, and signs of potential complications to monitor.

Regular follow-ups were scheduled at 1 week, 1 month, and 6 months postoperatively. At the 6-month follow-up visit, physical examination revealed complete healing of all surgical sites with no evidence of hernia recurrence. The patient reported full return to her baseline functional status and normal daily activities without any abdominal discomfort or limitations. She expressed high satisfaction with the surgical outcome and had no mesh-related complications or chronic pain.

DISCUSSION

Strangulated femoral hernia represents a challenging surgical emergency with significant morbidity and mortality implications. As demonstrated in our case, prompt diagnosis and appropriate surgical intervention are crucial for optimal patient outcomes.

Early and accurate diagnosis of a strangulated femoral hernia remains challenging due to nonspecific clinical presentations. As noted by Nguyen and Nguyen (2), "the clinical symptoms and physical signs are frequently obscure, and the diagnosis is sometimes delayed until intraoperative diagnosis for bowel obstruction". The classic Howship-Romberg sign, present in approximately 56.2% of cases, consists of ipsilateral medial thigh and hip pain exacerbated by adduction and medial rotation of the thigh (2). However, this sign is often confused with hip osteoarthritis in elderly patients, leading to diagnostic delays and inappropriate referrals.

Pietrogiovanna et al. (1) noted that "clinical signs of femoral hernia are not always obvious and up to 40% are overseen in open repair techniques". This diagnostic challenge is particularly relevant in elderly women, where femoral hernias are more common but often overlooked.

Contrast-enhanced CT has emerged as the gold standard for diagnosing femoral hernias, with diagnostic accuracy ranging from 80-100% (2). In our case, the choice of CT over ultrasonography reflected the practical realities of emergency medicine, where immediate access to experienced ultrasonography personnel may be limited during off-hours. As emphasized by multiple authors, CT not only confirms the diagnosis but also provides crucial information about bowel viability and facilitates surgical planning.

The management of strangulated femoral hernias has evolved significantly with the advent of minimally invasive techniques. Yang and Liu (6) emphasized that laparoscopic surgery provides clearer visualization of anatomical structures and facilitates the diagnosis and treatment of femoral hernias, even in cases where a diagnosis was not made before surgery. Veetil et al. (3) emphasized that "laparoscopic surgery has the advantages of improved patient recovery in a shorter duration of time and earlier return to work or previous quality of life".

The TAPP approach has demonstrated particular efficacy in managing complex femoral hernias. As reported by Sbacco et al. (5), "emergency repair of inguinal and femoral hernias using TAPP is a valuable option, safe and feasible in selected patients". Their study of 66 patients showed that those treated with TAPP had significantly shorter hospitalization periods (2.59±2.28 vs. 9.08±14.48 days) and lower complication rates compared to open approaches.

Pietrogiovanna et al. (1) demonstrated that laparoscopic exploration revealed bilateral femoral hernias in 20.69% of cases, highlighting the advantage of comprehensive visualization afforded by minimally invasive approaches, which is particularly important since bilateral hernias are common in this population.

Recent literature has introduced novel techniques to enhance surgical outcomes. Luo et al. (4) described an innovative "spatial replacement" method for managing incarcerated femoral hernias, where "the principle is that changing the internal and external pressures of the hernia sac returns the hernia contents". This technique involves injecting normal saline into the hernia sac to equalize pressure, facilitating safe reduction without tissue damage.

Similarly, Song et al. (8) reported the successful application of biologic mesh in contaminated fields, noting that "biologic meshes confer potential advantages in contaminated surgical fields, including demonstrated anti-infective properties, the ability to promote tissue remodeling, and reduced recurrence rates relative to synthetic counterparts".

Contemporary series consistently report favorable outcomes with laparoscopic management. Veetil et al. (3) reported that "minimally invasive laparoscopic surgery can be done in the select group of cases of complicated femoral hernia by trained surgeons," with both patients in their series achieving full recovery without complications. Similarly, our 6-month follow-up demonstrated sustained surgical success without recurrence, aligning with favorable outcomes reported in recent laparoscopic femoral hernia series.

Despite the growing evidence on laparoscopic approaches, several limitations remain. As noted by Song et al. (8), "current evidence remains inadequate to establish laparoscopic methods as standardized protocols, as both

technical specifications and clinical indications require further validation through large-scale studies". The success of laparoscopic repair depends heavily on the surgeon's expertise, patient selection, and institutional capabilities.

CONCLUSION

The laparoscopic approach is a safe and effective option for the treatment of strangulated femoral hernias because of its minimally invasive features. This method offers the advantage of performing diagnosis and treatment in the same session, thereby reducing complication rates. In centers with appropriate surgical experience, laparoscopic surgery can be considered a standard treatment option.

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REFERENCES

1. Pietrogiovanna L, Janczak J, Pfeifer N, Strahm R, Brunner W. Incarcerated femoral hernia in women - A critical view on approach options. Int J Surg Case Rep. 2023;106:108149.
2. Nguyen MT, Nguyen VQ. Concurrent strangulated obturator hernia and femoral hernia repair via TAPP approach: A case report. SAGE Open Med Case Rep. 2023;11:2050313X231185956.
3. Veetil DK, Wadhawan R, Verma NK, Tanai SR. Complicated femoral hernia: Minimally invasive surgery management. J Minim Access Surg. 2023;19(4):555-8.
4. Luo B, Zhang X, Guo Q, Tian Y, Ren M. Application of spatial replacement method in the treatment of laparoscopic incarcerated femoral hernia - A case report. Int J Surg Case Rep. 2022;98:107535.
5. Sbacco V, Petrucciani N, Lauteri G, Cossa A, Portinari M, Brescia A, et al. Management of groin hernias in emergency setting: differences in indications and outcomes between laparoscopic and open approach. A single-center retrospective experience. Langenbecks Arch Surg. 2024;409(1):48.
6. Yang XF, Liu JL. Laparoscopic repair of femoral hernia. Ann Transl Med. 2016;4(19):371.
7. Paasch C, De Santo G, Look P, Boettge K, Hünerbein M. Laparoscopic treatment of an incarcerated Meckel's diverticulum in a femoral hernia. Case Rep Surg. 2019;2019:3140706.
8. Song HX, Xie TH, Fu Y, Jin XS, Wang Q, Niu Z. Single-stage laparoscopic transabdominal preperitoneal (TAPP) utilizing biologic mesh for De Garengeot hernia: a case report and literature review. Front Med. 2025;12:1643775.